	Application No.	**Applicant(s)**
Notice of Allowability	10/660,167	DAY ET AL.
	Examiner	**Art Unit**	
	Michael D. Pham	2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *10/22/07*.

2. ☒ The allowed claim(s) is/are *7,8,10,13 and 14*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a) ☐ All   b) ☐ Some*   c) ☐ None   of the:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

     * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

     (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

     (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *10/31/07* .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

DETAILED ACTION

1. Claims 7,8,10 and 13-14 are pending in this office action.

EXAMINER'S AMENDMENT

2.   An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for an examiner's amendment was given in a telephone interview with Mr. Scott A. Stinebruner (reg. 38,323) on October 30, 2007.

In the claims:

Claim 7, 8, and 10 has been amended. Please replace all prior claims with the claims below.

Claim 7:

A <u>computer-implemented</u> method for executing a query that evaluates one or more records of a table according to predetermined selection criteria, comprising the steps of:

<u>optimizing a query plan for the query by labeling the query as a candidate query for dynamic bitmap updating,</u>

<u>where optimizing the query plan for the query by labeling the query as a candidate query for dynamic bitmap updating further comprises before initializing a bitmap and starting a first primary task and a second background task, determining if the query is labeled as the candidate query for dynamic bitmap updating;</u>

when the query is labeled as the candidate query for dynamic bitmap updating

then executing the steps of:

initializing a bitmap having a plurality of elements, each element of the bitmap

corresponding to a record of the table, and each element initialized to an active value;

running [[a]] the first primary task that individually retrieves each of [[the]] one or

more records from storage according to whether [[the]] a corresponding element of the

bitmap has an active value;

running, concurrently with the first primary task, a second background task that

executes [[the]] a same query as the first primary task and that updates the bitmap by

setting [[to]] an inactive value to the [[respective]] element of the bitmap corresponding

to any record that does not satisfy at least a portion of the selection criteria, wherein

running the second background task includes:

scanning a column of the table using an index built over the column; the

portion of the selection criteria relating to record values within the column;

determining a set of records whose record values within the column do not

satisfy the portion of the selection criteria; and

concurrently with the first primary task individually retrieving records from

the storage having corresponding [[active-value]] active value bitmap elements,

changing the [[respective]] corresponding bitmap element to an inactive value for each

record within the set of records; and

continuing to run the first primary task until all records from the table, having a

corresponding [[active-value]] active value bitmap element, have been retrieved from

the storage, including accessing the bitmap in the first primary task before at least one

element is set to an inactive value by the second background task to determine whether

to retrieve a record from the storage[[;]].

[[optimizing a query plan for the query by labeling the query as a candidate for

dynamic bitmap updating; and

before initializing the bitmap and starting the first task and second task,

determining if the query is labeled as a candidate for dynamic bitmap updating.]]

Claim 8:

The method according to claim 7, wherein the step of running the first primary task

includes the steps of:

determining if a retrieved record satisfies the selection criteria; and

returning, as part of a query result set, the retrieved record if the selection criteria

is satisfied.

Claim 10

The method according to claim 7, wherein the step of running the first primary task

includes the steps of:

discarding any record having a corresponding bitmap element which has an

inactive value, by not retrieving that record from the storage.

Claim 13

The method according to claim 9, wherein a first order in which the one or more records

is retrieved differs from a second order in which the column of the table is scanned.

Claim 14

The method according to claim 7, further comprising the steps of:

collecting statistics relating to performance of executing the query; and

generating a recommendation presented to a user for creating a permanent

index based on the statistics.

Allowable Subject Matter

3.   Claims 7, 8, 10, 13, and 14 are allowed.

4.   The following is a statement of reasons for the indication of allowable subject

matter:

The claimed invention of claim 7 is directed to the use of an index to update a

bitmap in one task concurrently with accessing records in another task using the bitmap.

That the present invention utilizes a bitmap to reduce unnecessary I/O operation but

can also provide matching records back to the user without the typical delay period

needed to build the complete bitmap.

With respect to independent claim 7, the prior art of record, single or in combination, does not teach or fairly suggest the step of:

"optimizing a query plan for the query by labeling the query as a candidate query for dynamic bitmap updating, where optimizing the query plan for the query by labeling the query as a candidate query for dynamic bitmap updating further comprises before initializing a bitmap and starting a first primary task and a second background task, determining if the query is labeled as the candidate query for dynamic bitmap updating; running, concurrently with the first primary task, a second background task that executes a same query as the first primary task and that updates the bitmap by setting an inactive value to the element of the bitmap corresponding to any record that does not satisfy at least a portion of the selection criteria, wherein running the second background task includes: scanning a column of the table using an index built over the column, the portion of the selection criteria relating to record values within the column; determining a set of records whose record values within the column do not satisfy the portion of the selection criteria; and concurrently with the first primary task individually retrieving records from the storage having corresponding active value bitmap elements, changing the corresponding bitmap element to an inactive value for each record within the set of records" in combination with all other claimed elements.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Application/Control Number: 10/660,167 Page 7
Art Unit: 2167

Contact Information

5.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Michael D. Pham whose telephone number is (571)272-

3924. The examiner can normally be reached on Monday - Friday 9am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John Cottingham can be reached on 571-272-7079. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Michael Pham
Art Unit 2167
Examiner   𝜇.𝒫.

Cam Y. Truong
Art Unit 2162
Primary Examiner

John Cottingham
Art Unit 2167
Supervisor

JOHN COTTINGHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100